

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
| 10/736,084      | 12/15/2003  | Joseph C. Walsh      | 2003P88073US        |

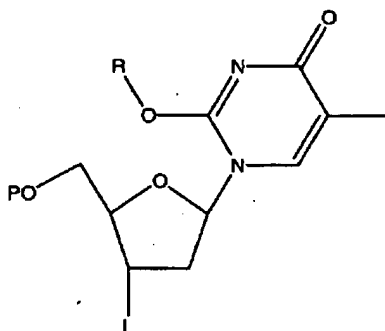
Response To **OFFICIAL ACTION**

| EXAMINER            |             |
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| Krishnan, Ganapathy |             |
| ART UNIT            | PAGE NUMBER |
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**AMENDMENTS TO THE CLAIMS**

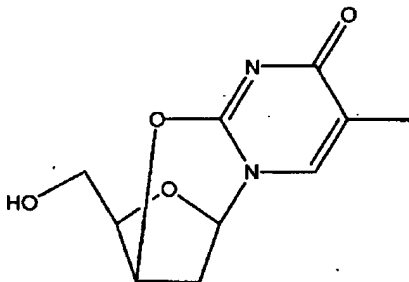
In the Claims, please make the following amendments:

1. (Currently Amended) A method for preparing a compound having the following formula:

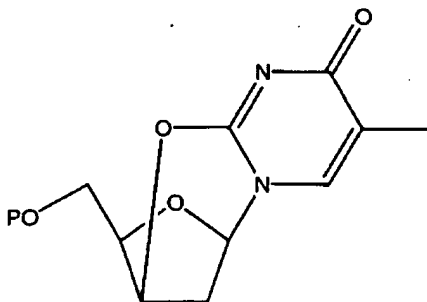


wherein R is an alkoxy blocking group; P is a hydroxyl protecting group; and L is a leaving group, the method comprising the steps of:

- a. reacting a compound of the formula:



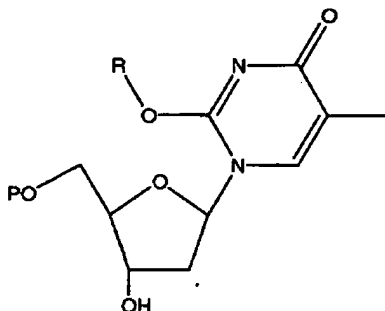
with a hydroxyl protecting group to produce a compound having the following formula:



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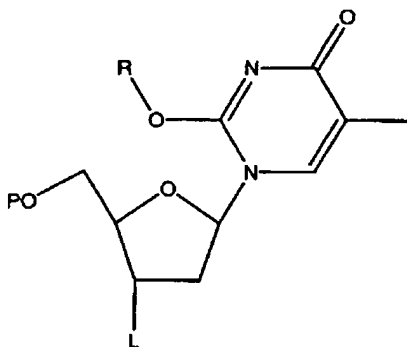
wherein P is the same as defined above;

b. enolating the reaction product of step (a) by reacting the reaction product of step (a) with an alkoxide having 1 to 4 carbons, cycloalkoxide C<sub>3</sub>-C<sub>6</sub>, phenoxide, tosylate, acetate or benzoate to produce a compound having the following formula:



wherein P and R are the same as defined above; and

c. incorporating a leaving group to produce a compound having the following formula:



2. (Original) The method according to Claim 1, wherein P is selected from the group consisting of methoxymethyl ether, methylthiomethyl ether, 2-methoxyethoxymethyl ether, 1-ethoxyethyl ether, 1-methyl-1-methoxyethyl ether, t-butyl ether, allyl ether, benzyl ether, 4-nitrobenzyl ether, o-nitrobenzyl ether, trityl ether, monomethoxytrityl ether, dimethoxytrityl ether, tritylone ether, tetrahydropyran ether, tetrahydrothiopyran ether, 4-methoxy tetrahydropyran ether, 4-methoxytetrahydrothiopyran ether, tetrahydrofuran ether, tetrahydrotriofuranyl ether, isobutyrate ester, pivaloate ester, adamantate ester, benzoate ester, 2,4,6-trimethylbenzoate ester, methyl carbonate,

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allyl carbonate, benzyl carbonate, p-nitrobenzyl carbonate, t-Bu carbonate, S-benzylthio carbonate, N-phenyl carbamate, and nitrate ester.

3. (Original) The method according to Claim 1, wherein P is selected from the group consisting of dimethoxytrityl, monomethoxytrityl, trityl, t-butyloxycarbonyl, t-butyldimethylsilyl, t-butyldiphenylsilyl, tetrahydropyranyl ether, tetrahydrofuranyl ether, ethoxyethyl ether, and 1-methyl-1-methoxyethyl ether.

4. (Original) The method according to Claim 1, wherein R is alkyl C<sub>1</sub>-C<sub>4</sub>, *i*-propyl, benzyl, cycloalkane C<sub>3</sub>-C<sub>6</sub>, phenyl, tosyl, acetate, or benzoate.

5. (Original) The method according to Claim 1, wherein R is methyl, ethyl, *i*-propyl, benzyl, or cycloalkane C<sub>3</sub>-C<sub>6</sub>.

6. (Cancelled).

7. (Currently Amended) The method according to Claim [[6]] 1, wherein the alkoxide is sodium methoxide.

8. (Original) The method according to Claim 1, wherein L is a sulfonate ester.

9. (Original) The method according to Claim 1, wherein L is selected from the group consisting of mesylate, nosylate, tosylate, and triflate.

10. (Currently amended) A method for preparing a precursor for the preparation of a radiolabeled nucleoside comprising:

- a. converting a 2-deoxy nucleoside into a 2,3'-anhydronucleoside;
- b. reacting the 2,3'-anhydronucleoside with a hydroxyl protecting group to produce a 2,3'-anhydronucleoside derivative wherein the 5'-O group is protected;
- c. reacting the protected 2,3'-anhydronucleoside derivative with a reagent an alkoxide that opens the 2,3'-anhydro-ring and enolates the 2-position on the pyrimidine ring; and
- d. incorporating a leaving group to produce the radiolabeled nucleoside precursor;

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where the nucleoside base is thymidine or uridine.

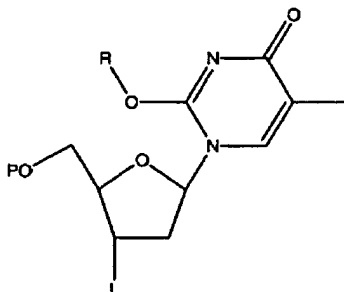
11. (Previously presented) The method according to Claim 10, wherein the nucleoside is thymidine or uridine.
12. (Currently Amended) A method for preparing a precursor for the preparation of 3'-Deoxy-3'-[ $^{18}\text{F}$ ]-fluoro-thymidine ( $^{18}\text{F}$ -FLT) comprising:
  - a. converting thymidine into 2,3'-anhydrothymidine;
  - b. reacting the 2,3'-anhydro thymidine with a hydroxyl protecting group to produce a 2,3'-anhydrothymidine derivative wherein the 5'-O group is protected;
  - c. reacting the protected 2,3'-anhydrothymidine derivative with a reagent an alkoxide that opens the 2,3'-anhydro-ring and enolates the 2-position on the pyrimidine ring; and
  - d. incorporating a leaving group to produce the  $^{18}\text{F}$ -FLT precursor.
13. (Original) The method according to Claim 12, wherein step (c) produces an enol having an -O-R group attached to the 2-carbon.
14. (Currently amended) A method according to Claim 13, wherein R is alkyl  $\text{C}_1\text{-C}_4$ , ~~benzyl~~, cycloalkane  $\text{C}_3\text{-C}_6$ , or phenyl, ~~tosyl, acetate, or benzoate~~.
15. (Cancelled).
16. (Currently Amended) A method according to Claim ~~[[15]]~~ 12, wherein the alkoxide is selected from the group consisting of sodium methoxide, and sodium ethoxide.
17. (Original) A method according to Claim 12, wherein the hydroxyl protecting group is dimethoxytrityl, monomethoxytrityl, trityl, t-butyloxycarbonyl, t-butyldimethylsilyl, t-butyldiphenylsilyl, tetrahydropyranyl ether, tetrahydrofuranyl ether, ethoxyethyl ether, or 1-methyl-1-methoxyethyl ether.
18. (Original) A method according to Claim 12, wherein the hydroxyl protecting group is dimethoxytrityl, monomethoxytrityl, or trityl.

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19. (Original) A method according to Claim 12 wherein the leaving group is a sulfonate ester.

20. (Original) A method according to Claim 19, wherein the leaving group is mesylate, tosylate, nosylate, or triflate.

21. (Currently amended) A compound having the following formula:



wherein R is alkyl C<sub>1</sub>-C<sub>4</sub>, benzyl, cycloalkane C<sub>3</sub>-C<sub>6</sub>, phenyl, tosyl, acetate, or benzoate; P is a hydroxyl protecting group selected from the group consisting of methoxymethyl ether, methylthiomethyl ether, 2-methoxyethoxymethyl ether, 1-ethoxyethyl ether, 1-methyl-1-methoxyethyl ether, t-butyl ether, allyl ether, benzyl ether, 4-nitrobenzyl ether, o-nitrobenzyl ether, trityl ether, monomethoxytrityl ether, dimethoxytrityl ether, tritylone ether; tetrahydropyran ether, tetrahydrothiopyranyl ether, 4-methoxy tetrahydropyran ether, 4-methoxytetrahydrothiopyranyl ether, tetrahydrofuran ether, tetrahydrotriofuranyl ether, isobutyrate ester, pivaloate ester, adamantate ester, benzoate ester, 2,4,6-trimethylbenzoate ester; methyl carbonate, allyl carbonate, benzyl carbonate, p-nitrobenzyl carbonate, t-Bu carbonate, S-benzylthio carbonate, N-phenyl carbamate, nitrate ester, t-butyloxycarbonyl, t-butyldimethylsilyl, and t-butyldiphenylsilyl; and L is a leaving group.

22. (Original) A compound according to Claim 21, wherein R is methyl or ethyl.

23-24. (Cancelled)

25. (Original) A compound according to Claim 21, wherein P is dimethoxytrityl.

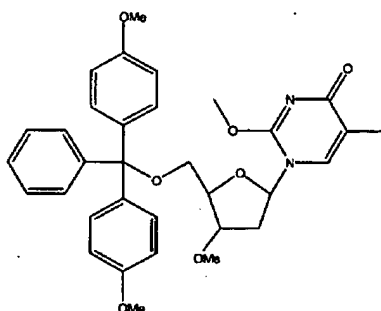
26. (Original) A compound according to Claim 21, wherein L is a sulfonate ester.

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27. (Original) A compound according to Claim 21, wherein L is selected from the group consisting of p-(2,4-dinitroanilino)benzenesulfonyl, benzenesulfonyl, methylsulfonyl (mesylate), p-methylbenzenesulfonyl (tosylate), 4-nitrobenzene sulfonyl (nosylate), p-bromobenzenesulfonyl, trifluoromethylsulfonyl (triflate), trichloroacetimidate, acyloxy, 2,2,2-trifluoroethanesulfonyl, imidazolesulfonyl, and 2,4,6-trichlorophenyl.

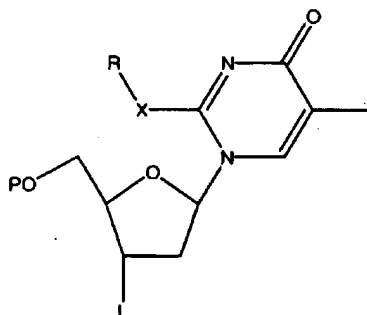
28. (Original) A compound according to Claim 21, wherein R is methyl, P is dimethoxy trityl, and L is mesylate, tosylate, or nosylate.

29. (Original) A compound having the following formula:



wherein Ms is methylsulfonyl.

30. (Currently Amended) A compound having the following formula:



wherein R is alkyl C<sub>1</sub>-C<sub>4</sub>, benzyl, cycloalkane C<sub>3</sub>-C<sub>6</sub>, phenyl, tosyl, acetate, or benzoate; P is a hydroxyl protecting group selected from the group consisting of dimethoxytrityl, monomethoxytrityl, trityl, t-butyloxycarbonyl, t-butyldimethylsilyl, t-butyldiphenylsilyl, tetrahydropyranyl ether, tetrahydrofuranyl ether, ethoxyethyl ether, and 1-methyl-1-methoxyethyl ether; X is oxygen, sulfur, or nitrogen, and L is a leaving group.

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31. (Original) A compound according to Claim 30, wherein L is halogen, p-(2,4-dinitroanilino)benzenesulfonyl, benzenesulfonyl, methylsulfonyl (mesylate), p-methylbenzenesulfonyl (tosylate), 4-nitrobenzene sulfonyl (nosylate), p-bromobenzenesulfonyl, trifluoromethylsulfonyl (triflate), trichloroacetimidate, acyloxy, 2,2,2-trifluoroethanesulfonyl, imidazolesulfonyl, or 2,4,6-trichlorophenyl.

32. (Cancelled).

33-34. (Cancelled)

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